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Introduction to the Special Issue: Transitions in Substance Use Across Time, Gender, and Culture

Richard J. Rose¹ and Dorret I. Boomsma,² Editors

This special issue had its origins in a symposium arranged for the Ninth International Congress on Twin Studies, held in Helsinki, June 1998. The symposium consisted of six submitted or solicited papers that used twin comparisons to examine transitions in substance use and abuse across time, gender, and culture. It was well received, and before the Congress ended, plans were formulated to turn the symposium into a special issue of this journal. Five of the Congress Symposium presentations have been adapted for this issue. Four additional papers were solicited to extend the range of issues and substances surveyed and the characteristics of the twin samples employed; several of the added papers were adapted from presentations made at the Stockholm meeting of BGA, which was held the week following the Helsinki Twin Congress.

It is appropriate that this special issue, directed to twin studies of substance use and abuse, had its origins in meetings in Helsinki and Stockholm. One of the first conventional comparisons of smoking habits in adult twins was reported by Stockholm investigators four decades ago; Friberg *et al.* (1959) reported significantly greater concordance in MZ than in DZ twin pairs in a sample of adult twins born in the early part of the century in Lund University Hospital. Seven years later, the first major twin study directed to patterns of social drinking was reported with data from a population-based cohort of adult Finnish twin brothers. Juha Partanen and his collaborators, Kettil Bruun and Touko Markkanen, published their findings as "Inheritance of Drinking Behavior," a volume in the Finnish Foundation for Alcohol Studies, dated September 1966. This three-decade-old work provides an appropriate context for analyses reported in this spe-

cial issue. Partanen *et al.* were appreciative of the very large individual differences readily evident in smoking and drinking behavior. They attempted a large-scale study to "evaluate the relative importance" of genetic and environmental influences on variation in the use of alcoholic beverages. They fully appreciated "the complexity of human drinking behavior," arguing that "the various components of drinking behavior should be analyzed separately." They suggested that such analyses should begin with the distinction between abstinence and the initiation of drinking and further suggested that, among all who have initiated use, the quantity and density of consumption, as well as social complications of sustained heavy drinking, should be distinguished. Using canonical analysis, Partanen and colleagues presented an early multivariate analysis of these drinking variables. Finally, they attempted to assess demographic influences on smoking and drinking behaviors by examining variables such as degree of urbanization and age as moderators of genetic contributions to variation and substance use.

The early Finnish work was remarkably prescient. More than three decades later, contemporary behavioral geneticists are pursuing many of the same issues but enjoy larger and more representative samples, data from longitudinal designs, and modern multivariate analyses. Among the questions addressed in papers included in this special issue is whether effects of common environment are more evident on the initiation of drinking, while latency from initiation to regular drinking and from regular drinking to social problems will show increasing genetic influence. Strong influences of common environment are found in some of this work, and the environmental effects may well be age modulated. Gene \times environment interaction in the etiology of early-onset alcohol use is a common finding. Some contributors ask whether the same genetic factors influence ini-

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tiation and continuation of alcohol and cigarette use and whether such genetic factors are modified by differences in age or gender. An early concern of the Finnish investigators, whether their twin data from Finland would generalize to other cultures, is addressed here; for genetic and environmental influences on persistent smoking behavior, in analyses of data from nearly 12,000 twins from Sweden, Finland, and Australia. Partanen and colleagues had cited early Finnish data suggesting a regulatory role of religious beliefs and practices on alcohol use. A report included in this special issue tests for that association in Dutch adolescents, finding a greater genetic influence on alcohol initiation for girls who were reared in less religious home environments.

This special issue includes twin data from five cultures (the United States, The Netherlands, Sweden, Finland, and Australia), and the twins range in age from very young adolescents to elderly twins recruited through the American Association of Retired Persons. A particular strength of one of the twin samples, the Vietnam Era Twin Registry, is that nearly all of the twin individuals have had access and exposure to substances,

so that dispositional vulnerabilities may be more evident in that adult twin sample. Conversely, the study of very young adolescent twins, including many who are abstinent at baseline study, allows investigators to evaluate the role of genetic and environmental factors on initiation and early escalation of substance use.

Contemporary twin studies of substance use and abuse have attracted the attention of many behavioral geneticists, and their fair share of research grant support. The studies reported in this special issue are a sampling of current work, and the sampler illustrates the problems—and promise—of quantitative behavior genetics as it enters the new millennium.

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